

Eleven Plus Maths How To Do - Distance, Time and Speed

When we plan to walk somewhere, to go by car or train it is necessary to know how much time should be allowed for the trip or journey.

Before we can estimate how long the trip will take, that is time, we need to know how far we have to travel, that is Distance.

If we walk 10 kilometres the time needed will be more than the time needed if we go by car, because the speed of the car is greater than our walking speed.

The car does not travel at the same speed throughout the journey. The driver slows down and stops at traffic lights, or at a zebra crossing. Sometimes the car goes fast, then it slows, then speeds up again.

When we walk we go briskly down hill, but slow down going up the next hill. We do not walk at the same speed all the way.

What we must know is what the average speed is. This we can work out only if we know the distance to travel and how much time the journey has taken.

If we know the time taken and the average speed of the journey then we can work out the distance travelled.

I walk 10 km in 2 hours at an average speed of 5 km per hour.

Distance D 10 km
Time T 2 hr
Speed S 5 km/hr

$$\begin{aligned} \text{Distance} &= \text{Time} \times \text{Speed} & D &= T \times S \\ & & D &= 5 \times 2 = 10 \text{ km} \end{aligned}$$

$$\begin{aligned} \text{Time} &= \frac{\text{Distance}}{\text{Speed}} & T &= \frac{D}{S} \\ & & &= \frac{10}{5} = 2 \text{ hrs} \end{aligned}$$

$$\begin{aligned} \text{Speed} &= \frac{\text{Distance}}{\text{Time}} & S &= \frac{D}{T} \\ & & &= \frac{10}{2} = 5 \text{ km/hr} \end{aligned}$$

NOTE:

$$D = T \times S$$

$$T = \frac{D}{S}$$

$$S = \frac{D}{T}$$